$$ppm = 512.3 \times d$$

wherein ppm is the approximate concentration of particles of less than about 25 microns in size in parts per million by weight, and d is the apparent density of the particles of less than about 25 microns in size in grams per cubic centimeter.

REMARKS

The Applicants initially acknowledge that original claims 40-45 have been renumbered as 39-44 by the Examiner. Applicants have therefore adopted the new numbering scheme and note that amended claim 44 above was originally claim 45. Claims 20 and 44 have been amended to more clearly identify that the claimed invention relates to oxygen-scavenging resin compositions. These amendments are supported by the specification on, for example, page 2, lines 19-21 and page 16, lines 3-14.

The Examiner has rejected claims 1-44 under 35 U.S.C. § 112, as containing subject matter that is not adequately described in the specification. Specifically, the Examiner states that Applicants have failed to adequately describe the nature of the disclosed iron particles and how they are obtained. After careful consideration of this rejection, Applicants respectfully disagree.

Initially, Applicants note that there is a strong presumption that an adequate written description of the claimed invention is present when the application is filed. *In re Wertheim,* 541 F.2d 257, 263, 191 U.S.P.Q. 90, 97 (C.C.P.A. 1976) ("we are of the opinion that the PTO has the initial burden of presenting evidence or reasons why persons skilled in the art would not recognize in the disclosure a description of the invention defined by the claims"). The Examiner states, "It is well known that the element iron has the apparent density of about 7.86 g/cc." Applicants respectfully traverse this assertion. As Applicants state on page 12, lines 26-28 of the subject application (Application), the density of metal powder particles is not necessarily identical to the density of the material from which it is produced, because of the internal porosity of the particle. In this regard, on page 12, lines 31-32, the application refers to a well known authority, *Kirk Othmer Encyclopedia of Chemical Technology. Kirk Othmer* reports iron particles having an apparent density of from about 0.97 to about 3.4 g/cc. *See* application,

page 13, lines 1-2. This range of well known iron samples clearly encompasses the apparent density of about 2.44 g/cc discussed in the application. As further evidence that iron particles having an apparent density of about 2.44 g/cc are well known in the art and readily obtainable, Applicants attach, as Exhibit A, a product data sheet for commercially available iron powder having an apparent density of 2.55 g/cc. Therefore, the nature of the iron particles disclosed and how they are obtained is well known in the art. Information that is well known in the art need not be described in detail in the application. *See, e.g., Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1379-80, 231 U.S.P.Q. 81, 90 (Fed. Cir. 1986). It is enough that, in light of the application as filed, a person of skill in the art would have recognized that Applicants were in possession of the claimed invention. *See In re Gostelli*, 872 F.2d 1008, 1012, 10 U.S.P.Q.2d 1614, 1618 (Fed. Cir. 1989) ("does the description clearly allow persons of ordinary skill in the art to recognize that he or she invented what is claimed"). Applicants therefore respectfully request that the Examiner withdraw the rejection under 35 U.S.C. § 112.

The Examiner has rejected claims 1-4, 6, 10, 11, 34, 36, 37, 39, and 42-44 under 35 U.S.C. § 102(e) as anticipated by, or in the alternative, under 35 U.S.C. § 103(a) as obvious over Edwards et al, U.S. Published Application No. 2002/077405 A1 ('405 application). Applicants have carefully considered this rejection, and respectfully disagree.

Inasmuch as the Examiner has cited a published application, it would appear that the Examiner has properly examined the instant application under 35 U.S.C. § 102(e) as amended by the American Inventors Protection Act of 1999, and pursuant to the recent Examination Guidelines posted on the U.S.P.T.O. website. However, the instant Office Action states that "this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA." Applicants therefore respectfully request that the Examiner clarify for the record that amended 35 U.S.C. 102(e) was used in the examination of the instant application.

Edwards et al. teach a polyester resin that includes from about 20 to about 200 parts per million (ppm) of an inert particulate additive, preferably talc or calcium carbonate. ('405 app. at Abstract). The inert additive reduces the coefficient of friction. (*Id.*). In contrast, the present invention requires oxygen-

scavenging particles. By definition, inert particles do not react, and therefore cannot be oxygen-scavengers. The '405 application does not teach, disclose, or suggest the addition of oxygen-scavenging particles to a resin composition, and therefore does not anticipate the instant invention. Furthermore, one of skill in the art would not be motivated, based upon the emphasis placed upon the inertness of the talc or calcium carbonate particles in the '405 application, to modify the patented resin by substituting reactive oxygen-scavenging particles. The instant invention is therefore not obvious over Edwards et al. under 35 U.S.C. § 103(a). *See In re Mills,* 916 F.2d 680, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990) (requiring a suggestion or motivation in the reference to make the modification in order to establish *prima facie* obviousness).

The Examiner has rejected claims 1-4, 6, 10, 11, 34, 36, 37, 39, and 42-44 under 35 U.S.C. § 102(b) as anticipated by, or in the alternative, under 35 U.S.C. § 103(a) as obvious over Nichols, U.S. Pat. No. 5,008,230 ('230 patent). Applicants have carefully considered this rejection, and respectfully disagree.

Nichols teaches a catalyst system for producing polyethylene terephthalate (PET). ('230 patent, col. 2, lines 36-38). The catalyst system includes (a) antimony; (b) cobalt or zinc; and (c) zinc, magnesium, manganese, or calcium. ('230 patent, col. 2, lines 44-49). Although the Examiner refers to the "elemental metal catalysts" taught by Nichols, it is clear from the '230 patent that Nichols actually teaches catalysts "in the form of inorganic compounds such as carboxylates (such as acetates), compounds of Group VI (such as oxides or sulfides), halides such as chlorides, amines,...". ('230 patent, col. 4, lines 37-41). One of skill in the art would readily appreciate that the compounds disclosed by Nichols as effective catalysts would not be effective oxygen-scavengers, because these compounds do not contain substances that are in an oxidizable state. In contrast, the present invention requires an effective amount of oxygen-scavenging particles. The '230 patent does not teach or disclose insoluble oxygen-scavenging particles, and therefore does not anticipate the present invention. *See Verdegaal Bros. v. Union Oil Co. of California,* 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987) ("a claim is anticipated only if each and every element as set forth in the claim is found...in a single prior art reference"). Furthermore, the '230 patent does not provide any

suggestion that would motivate one of skill in the art to make the significant modifications discussed above to achieve the instant invention. The instant invention is therefore not obvious over Nichols under 35 U.S.C. § 103(a).

The Examiner has rejected claims 1-6, 12-15, 17, 20-22, 24, 34, 36-39, and 44 under 35 U.S.C. § 102(b) as anticipated by, or in the alternative, under 35 U.S.C. § 103(a) as obvious over Konagaya el al., U.S. Pat. No. 5,434,000 ('000 patent). Applicants have carefully considered this rejection, and respectfully disagree.

Applicants initially note that the following arguments attempt to be fully responsive to the Examiner's rejection, however several of the Examiner's statements regarding the Konagaya reference are inaccurate. For example, the Examiner states, "Konagaya et al teach polyester resins containing 10-500 ppm of various elemental metals in table 2." Table 2, however, shows oxide compounds, not elemental metals, and shows amounts of 3000-5000 ppm. Also confusing is the Examiner's reference to the particle size of cobalt acetate and antimony, when neither cobalt nor antimony are mentioned in the Konagaya patent.

The '000 patent teaches a polyester film containing a particulate compound oxide of aluminum, boron, silicon, titanium, zirconium, tungsten, or iron. ('000 patent, Abstract). The function of the oxide compound is to improve scratch resistance. (*Id.*) Konagaya does not teach or disclose oxygen-scavenging particles. One of skill in the art would readily recognize that the oxide compounds of the '000 patent are not effective oxygen-scavengers because the metal in these compounds is already fully oxidized. Oxide compounds generally do not react further with oxygen, as required by the oxygen-scavenging particles of the present invention. *See* application, page 7, lines 6-7 ("Suitable particles comprise at least one oxidizable material capable of reacting with molecular oxygen."). The '000 patent therefore does not anticipate the present invention, which requires oxygen-scavenging particles. Nor does the '000 patent suggest to one of skill in the art that the required oxide compounds can be replaced by oxygen-scavenging particles. The instant invention is therefore not obvious over Konagaya under 35 U.S.C. § 103(a).

The Examiner has rejected claims 1-4, 6, 34, 36, 37, 39, and 44 under 35 U.S.C. § 102(b) as anticipated by, or in the alternative, under 35 U.S.C. § 103(a) as obvious over Kuze el al., U.S. Pat. No. 4,595,715 ('715 patent). Applicants have carefully considered this rejection, and respectfully disagree.

The '715 patent discloses a polyester film comprising particles of kaolinite and calcium carbonate. ('715 patent, Abstract). The film has improved flatness, slipperiness, and abrasion resistance. ('715 patent, col. 2, lines 13-15). The Kuze patent does not teach, disclose, or suggest oxygen-scavenging particles. One of skill in the art would readily appreciate that kaolinite and calcium carbonate are not effective oxygen-scavengers, because these compounds do not contain substances that are in an oxidizable state. *See* application, page 7, lines 6-7 ("Suitable particles comprise at least one oxidizable material capable of reacting with molecular oxygen."). Indeed, the '715 patent describes them as "inert." ('715 patent, col. 2, lines 21-24). Furthermore, the '715 patent does not provide any suggestion that would motivate one of skill in the art to make the significant modifications necessary to achieve the instant invention, such as substituting reactive oxygen-scavenging particles for the inert kaolinite or calcium carbonate. The instant invention is therefore not obvious over Kuze under 35 U.S.C. § 103(a).

The Examiner has rejected claims 1-6, 11-15, 17, 19-22, 24, 26-34, 36-39, 43, and 44 under 35 U.S.C. § 102(b) as anticipated by, or in the alternative, under 35 U.S.C. § 103(a) as obvious over Maxwell el al., U.S. Pat. No. 6,022,920 ('920 patent). Applicants have carefully considered this rejection, and respectfully disagree.

The '920 patent teaches a polymer composition comprising from about 5 to about 50 parts per million (ppm) iron oxide (Fe_3O_4) particles. ('920 patent, col. 2, lines 18-22, 27). One of skill in the art would readily appreciate that Fe_3O_4 particles are not effective oxygen-scavengers, because the iron (IV) is not in an oxidizable state. Therefore the '920 patent does not anticipate the present invention, which requires oxygen-scavenging particles. Furthermore, the '920 patent does not provide any suggestion that would motivate one of skill in the art to make the significant modifications necessary to achieve the instant invention, such as substituting reactive oxygen-scavenging particles for the black iron oxide. The

instant invention is therefore not obvious over Maxwell et al. under 35 U.S.C. § 103(a).

Applicant notes that the conventional assumptions regarding particle size that prevailed prior to the present invention are expressed in the '920 patent at column 1, lines 37-39 and column 3, lines 23-27. More specifically, this fairly recent patent to Eastman Chemical Company states that dark-colored agents can be added in only very small quantities, and the presence of particles larger than about 10 microns cause the polymer composition to become hazy. In other words, according to the prior art, the use of greater than 50 ppm of particles, and/or the use of particles larger than 10 microns is to be avoided. In contrast, the present invention discloses that a resin composition containing an effective amount of oxygen-scavenging particles can contain larger particles and have good optical properties, so long as the amount of smaller particles (< 25 microns) is controlled.

The Examiner has rejected claims 1-4, 6, 11, 30-34, 36, 37, 39, 43, and 44 under 35 U.S.C. § 102(b) as anticipated by, or in the alternative, under 35 U.S.C. § 103(a) as obvious over Kriesche el al., U.S. Pat. No. 5,565,545 ('545 patent). Applicants have carefully considered this rejection, and respectfully disagree.

Kriesche et al. teach a process for adjusting the haze value of ethylene terephthalate polymers that depends upon the amount of antimony and germanium compounds present during esterification. ('545 patent, col. 1, lines 6-7, col. 2, lines 5-17). Suitable antimony and germanium compounds must be soluble in the polyester. ('545 patent, col. 2, lines 63-65). In contrast, the present invention requires oxygen-scavenging particles. The '545 patent does not teach or disclose the addition of oxygen-scavenging particles to resin. Indeed, the '545 patent teaches away from adding particles to the resin. ('545 patent, col. 1, lines 9-10 ("without adding particles that are insoluble in the polyester"); col. 6, lines 3-4 ("in the absence of other substances that would affect the haze value")). The present invention is therefore not anticipated by Kreische under 35 U.S.C. § 102(b), nor obvious over Kreische under 35 U.S.C. § 103(a). *See W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 U.S.P.Q. 303 (Fed. Cir. 1983), *cert. denied,* 469

U.S. 851 (1984) (reference must be considered in its entirety, including portions that would lead away from the claimed invention).

The Examiner has rejected claims 1-4, 6, 11, 30-37, 39, 43, and 44 under 35 U.S.C. § 102(b) as anticipated by, or in the alternative, under 35 U.S.C. § 103(a) as obvious over Tindale, U.S. Pat. No. 5,419,936 ('936 patent). Applicants have carefully considered this rejection, and respectfully disagree.

Tindale teaches a polymer composition comprising metal particles in an amount of from about 3 to 300 ppm with a reduced reheat time. ('936 patent, col. 1, lines 57-60, col. 3, lines 8-10). The particles must be intrinsically capable of absorbing radiation in the wavelength region 500 nm to 2000 nm. ('936 patent, col. 1, lines 62-68). No requirement or suggestion of oxygen-scavenging ability is present in the '936 patent. Suitable metals include antimony, tin, copper, silver, gold, arsenic, cadmium, mercury, lead, palladium, and platinum, however for environmental and economic reasons, the useful metals are limited to antimony, tin, and copper. ('936 patent, col. 2, lines 42-50). Iron is not disclosed, and therefore claims 20-29 of the present invention are not anticipated by the '936 patent.

No particular particle size is disclosed or suggested, except that the particles are sufficiently fine for them not to be visible to the eye, and have a range of sizes such that absorption or radiation occurs over a relatively wide range. ('936 patent, col. 2, lines 51-56). Table 1 of the '936 patent summarizes the reheat temperatures and haze values for bottles containing up to about 40 ppm antimony. Haze values are not shown for bottles containing higher amounts of metal. While low levels of metal may be sufficient to improve reheat characteristics, these levels are not sufficient for effective oxygen-scavenging. *(See* application, page 9, lines 2-4 ("Preferably, the oxygen-scavenging resin composition of the present invention comprises at least about 50 parts per million oxygen-scavenging particles by weight of the resin.)). The '936 patent therefore does not anticipate claims 1-19 and 30-44, which require an effective amount of oxygen-scavenging particles of the present invention. Furthermore, the '936 patent does not teach, disclose, or suggest a particle size distribution in which particles of less than about 25 microns in size do not exceed a concentration defined by the formula: $ppm = 512.3 \times d$, wherein ppm is the approximate concentration of particles of less than about 25 microns in

size in parts per million by weight, and d is the apparent density of the particles of less than about 25 microns in size in grams per cubic centimeter. Likewise, the '936 patent does not motivate one of skill in the art to modify the patented invention by increasing the amount of particles, because it teaches that the amount of metal particles is limited by the amount of haze that is acceptable. ('936 patent, col. 3, lines 4-10). The instant invention is therefore not obvious over Tindale under 35 U.S.C. § 103(a).

The Examiner has rejected claims 1-4, 6, 11, 30-34, 36, 37, 39, 43, and 44 under 35 U.S.C. § 102(b) as anticipated by, or in the alternative, under 35 U.S.C. § 103(a) as obvious over Pengilly, U.S. Pat. No. 4,535,118 ('118 patent). Applicants have carefully considered this rejection, and respectfully disagree.

Pengilly teaches a polyester comprising carbon black, the polyester having improved infrared light absorption capacity. ('118 patent, col. 1, lines 11-15). The polyester is prepared by using an antimony catalyst, a phosphorus compound, and a bluing agent. ('118 patent, col. 4, lines 65-68). The antimony catalyst is a trivalent organic antimony compound. ('118 patent, col. 5, lines 1-2). The bluing agent is a cobalt compound such as cobalt acetate tetrahydrate, cobalt aluminate, cobalt benzoate, and cobalt chloride. ('118 patent, col. 5, lines 15-16, col. 6, lines 18-21). One of skill in the art would readily appreciate that trivalent organic antimony compounds and the above cobalt compounds are not effective oxygen-scavengers, because the antimony and cobalt are not in an oxidizable state. The present invention requires oxygen-scavenging particles. *(See* application, page 7, lines 6-7 ("Suitable particles comprise at least one oxidizable material capable of reacting with molecular oxygen.")). The '118 patent does not teach or disclose the addition of oxygen-scavenging particles to resin. Indeed, the '118 patent teaches away from adding particles to the resin. ('118 patent, col. 5, lines 60-64 ("if sufficient amounts exist in excess of the solubility limit of such a compound, [an antimony compound] will form particles and/or nucleation of crystallinity upon formation of the polyester. This results in a hazed article.")). The present invention is therefore not anticipated by Pengilly under 35 U.S.C. § 102(b), nor obvious over Pengilly under 35 U.S.C. § 103(a).

The Examiner has rejected claims 1-5, 7-9, 11-14, 16, 17, 19-24, 26, 29-34, 36-38, 40, 41, 43, and 44 under 35 U.S.C. § 103(a) as obvious over Yamashita et al., U.S. Pat. No. 6,218,017 ('017 patent). Applicants have carefully considered this rejection, and respectfully disagree.

As an initial matter, Applicants respectfully traverse the Examiner's apparent characterization of the present invention as "1 wt% (10,000 ppm) of inorganic particles having a size of 25 to 200 microns." This language does not appear in the claims or written description of the present invention. During examination of a patent application, the Examiner should look to the claims, and the claims should be given their broadest possible interpretation. *In re Cortright,* 165 F.3d 1353, 1359, 49 U.S.P.Q.2d 1464, 1468 (Fed. Cir. 1999).

Yamashita teaches a laminated structure having a heat sealant layer and an antistatic layer. ('017 patent, Abstract). The heat sealant layer may comprise inorganic fine particles in an amount of from 1 to 200 parts by weight per 100 parts thermoplastic resin, said particles having a particle size of from 0.001 to 200 micrometers. ('017 patent, col. 11, line 62 to col. 12, line 29). Suitable inorganic particles are the compounds enumerated in col. 12, lines 38-45, including oxides, chlorides, silicates, sulfates, and aluminum hydroxide. One of skill in the art would readily appreciate that these inorganic particles are not effective oxygen-scavengers, because they are not in an oxidizable state. The present invention requires oxygen-scavenging particles. The '017 patent does not teach, disclose, or suggest that oxygen-scavenging particles can be substituted for the above compounds in the heat sealant layer.

Intermediate layers, oxygen-absorbing layers, elastic layers, magnetic layers, gas-shielding layers, and adhesive layers may also be included in the laminated structure of the '017 patent. (Col. 28, lines 5-17). The oxygen-absorbing layer may include reducing metal powders. ('017 patent, col. 27, lines 55-63). The present invention requires oxygen-scavenging particles that have a particle size distribution such that particles of less than about 25 microns in size do not exceed a concentration defined by the formula ppm = 512.3 x d, wherein ppm is the approximate concentration of particles of less than about 25 microns in size in parts per million by weight. In contrast, there is no disclosure, teaching, or suggestion in

the '017 patent of particle size or quantity of said metal powders, except that the metal powder is a "principle component". No mention is made in the '017 patent regarding color or haze of the laminated structure when an oxygen-absorbing layer is included. Applicants note that the Tables of data do not include any haze data for laminated structures having an oxygen-absorbing layer. Therefore, the present invention is not anticipated by, nor obvious over the '017 patent. *See In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974) (stating that all the claim limitations must be taught or suggested by the prior art to establish *prima facie* obviousness).

In view of the foregoing amendments and arguments, the Applicants respectfully request the Examiner to reconsider and withdraw the rejection of claims 1-44. A formal notice of Allowance is earnestly solicited. Should the examiner wish to discuss any of the foregoing in greater detail, the undersigned attorney would welcome a telephone call.

Respectfully submitted,

Tama L. Drenski

Tama L. Drenski, Reg. No. 50,323
Donald J. Bobak, Reg. No. 27,182
Renner, Kenner, Greive, Bobak, Taylor & Weber
First National Tower, 4th Floor
Akron, Ohio 44308-1456
Telephone: (330) 376-1242
Facsimile: (330) 376-9646
E-mail: tldrenski@rennerkenner.com

Attorneys for Applicants

Dated: Jan. 7, 2003

MARKED UP VERSION OF THE CLAIMS
Serial No. 09/676,239

20. (amended) A resin composition comprising a film-forming polyester and from about 50 to about 2500 parts by weight of oxygen-scavenging iron particles per million parts by weight of the resin, wherein the concentration of iron particles of less than about 25 microns in size does not exceed about 1250 parts per million by weight of the resin.

44[5]. (amended) A resin composition comprising:

a film-forming polyester; and

particulates comprising oxygen-scavenging particles; wherein the particulates have a particle size distribution such that particles of less than about 25 microns in size do not exceed a concentration defined by the formula

$$ppm = 512.3 \times d$$

wherein ppm is the approximate concentration of particles of less than about 25 microns in size in parts per million by weight, and d is the apparent density of the particles of less than about 25 microns in size in grams per cubic centimeter.